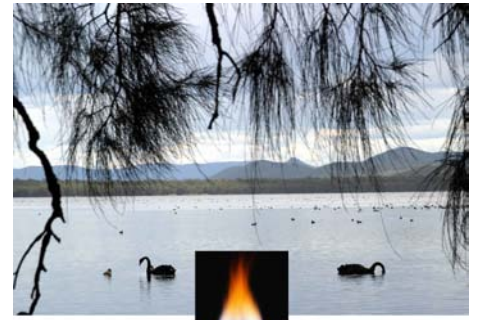


UNITED MYALL RESIDENTS AGAINST GAS EXTRACTION

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24th October 2011

The Committee Secretary
Inquiry into management of the Murray-Darling Basin
Impact of mining coal seam gas
PO Box 6100
CANBERRA ACT 2600.

This is a submission from the United Myall Residents Against Gas Extraction which represents people living in the vicinity of the catchment area of the Myall Lakes in NSW. This organisation was formed recently when it became known that a coal seam gas company, Pangaea Resources Pty Ltd, was approaching people individually, seeking access to their properties for exploration. No community notifications had been given by Pangaea re its intentions. Our concerns were heightened when we saw the misinformation that was being presented by Pangaea to the people whom it approached. At this early stage of our existence, we have some hundreds of members and membership is expanding rapidly. Upon investigation we have discovered that Pangaea hold PEL476. The Myall catchment is in the south-east portion of PEL476.

We urge the NSW Government to adopt the “Precautionary Principle” in all of its actions in relation to coal seam gas. Prevention is better than cure! There are widespread concerns, not just among the population in general but also at the highest levels of public service and academia, that coal seam gas extraction poses significant potential threats to the environment and health. The current regime creates extremely iniquitous situations for property owners, situations that most property owners are unable to address properly. It also poses major conflicts of interest for the NSW Government which both grants the mining approvals and stands to receive billions of dollars from royalties.

In the lead-up to the last election, the NSW Liberals and Nationals committed in their Strategic Regional Land Use document, to prepare Strategic Land Use Plans for the whole state. The document acknowledges that *“agricultural land and other sensitive areas exist in NSW where mining and coal seam gas extraction should not occur”*. These strategic land use plans *“will set the framework within which future development will be assessed”*.

Unfortunately the NSW Government seems to be renegeing on its promises. In evidence before this Inquiry, upon being questioned about access to properties for purposes of mining, The Government response was¹:

“Do we want to say that there are areas that absolutely nothing can be done by anybody anywhere anytime? No, we do not think that is an appropriate regime”.

Mr. Paterson’s following comments on the same page in Hansard state that he could envisage exploration and production of coal seam gas on prime agricultural land.

¹ Mr. Paterson - Director General Dept of Trade & Investment, Regional Infrastructure & Services
Hansard transcript of this Inquiry 9/9/2011 page 66

We note also that recent announcements by the NSW Government have deleted reference to “*other sensitive areas*” as set out in their Strategic Land Use policy prior to the election.

The catchment for the Myall Lakes, a Ramsar listed site of international significance, is just such a sensitive area. No activities should be permitted within the catchment of the Myall Lakes that have any possibility, however remote, of endangering this national treasure. The Ramsar Information Sheet (RIS) for the Myall Lakes states that one of the criteria for including the Myall Lakes as a Ramsar site is that “*The Myall Lakes wetlands are significant because they cover an extensive area and are in relatively near-natural condition*”. The RIS also records that “*The Myall Lakes wetlands have a high social and cultural value*”. The main input of fresh water to the Myall Lakes system is from the Myall and Crawford Rivers which extend into the Myall catchment that is now part of this PEL476. The Crawford River also is the town water supply for Bulahdelah.

The Myall Lakes only exist in their current relatively pristine state now because of the actions taken to prevent mining several decades ago. The same is true of Australia’s Great Barrier Reef. Now we have yet another mining challenge to an irreplaceable part of Australia’s environment. We must not let short-term gain inflict long-term pain by destroying unique natural assets.

We summarise our submission as follows:

1. There should be a total moratorium on all CSG activities within the Myall catchment until the Strategic Regional Land Use Plan has been prepared for this area.
2. The NSW Government should develop a comprehensive planning, assessment and management program in relation to coal seam gas, so that environmental, health and social concerns are addressed properly and transparently.
3. The NSW Government should develop comprehensive legislation to address property owners’ rights in relation to coal seam gas activities.
4. The NSW Government should structure its decision making in relation to coal seam gas to avoid conflicts of interest between those ministers granting approvals and receiving the revenue and those ministers whose role is to protect the environment, health and social well-being.
5. The NSW Government (and the Australian Government) should investigate the whole life-cycle carbon cost of CSG to properly determine whether CSG will aggravate or ameliorate global warming.
6. The NSW Government should review CSG royalties to ensure a just return to the people of NSW.
7. The NSW Government should review, taking into account the potential risks of CSG extraction, whether CSG production should be expanded to provide for significant volumes of gas to be exported.

The remaining sections of this submission set out in more detail our specific concerns and recommendations as follows:

1. The environmental and health impact of CSG activities.
2. The economic and social implications of CSG activities.
3. The role of CSG in meeting the future energy needs of NSW.
4. The interaction of the Act with other legislation and regulations.
5. The impact similar industries have had in other jurisdictions.
6. The position of the NSW Government.
7. Short term actions to resolve major issues.

We would be delighted to appear before the committee and answer any questions if so desired. We do urge the committee to take this submission into account most seriously as there appear to be very large potential problems associated with the continued growth of the CSG industry. The result is widespread and increasing community opposition to coal seam gas.

Yours faithfully

Troy Lawrence
Chairman

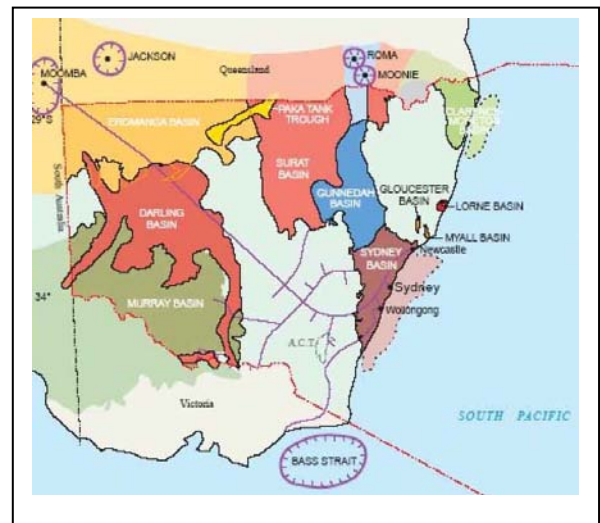
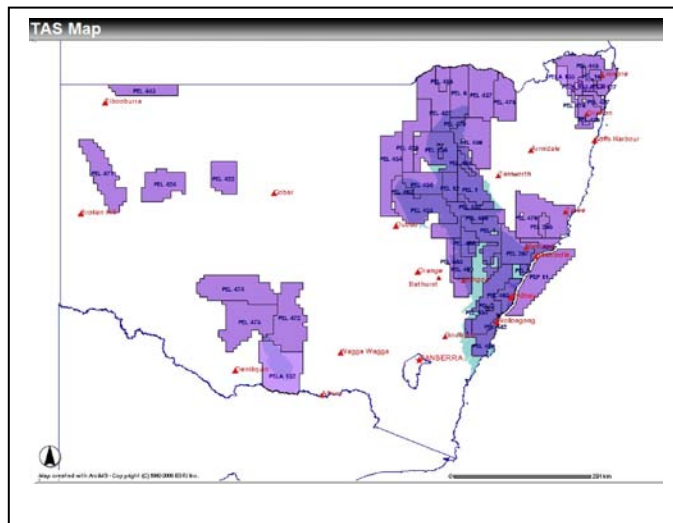
Charlie Shuetrim AM
Committee member

1. ENVIRONMENTAL AND HEALTH IMPACT OF CSG ACTIVITIES

This is the principal area where we urge the Government to adopt the “*Precautionary Principle*”. The five year royalty holiday in NSW has created a CSG “*gold rush*” with exploration and mining companies grasping for the maximum number of opportunities.

The diagram on the left below, shows the extent of petroleum applications and titles in NSW at this moment (<http://www.dpi.nsw.gov.au/minerals/titles/online-services/tasmap>).

The applications and titles correspond closely with the right-hand diagram of principal sedimentary basins in NSW (<http://www.dpi.nsw.gov.au/minerals/resources/petroleum/map>). These basins are the areas where coal seam gas is likely to be found. The majority of sedimentary basins in the eastern portion of NSW are already covered by petroleum applications and titles. **We recommend that all government actions in relation to coal seam gas must apply to these existing applications and titles as well as to new applications and titles granted in the future.**



1.1 THE ASSESSMENT AND DETERMINATION PROCESS

We recommend that the Government structure its decision making in relation to coal seam gas to avoid conflicts of interest between those ministers granting approvals and receiving the revenue and those ministers whose role is to protect the environment, health and social wellbeing. This is even more vital right now as some companies have paid hundreds of millions of dollars up front for their licences and will expect to be able to pursue what they perceive as their “just reward” with great vigour. These companies are typically not noted for their track record of concern or consideration for the environment, health and social welfare.

A key part of the decision-making process in relation to coal seam gas is the preparation of various reports to enable the assessment of any likely impacts on the environment, property owners, community infrastructure and so on. **We recommend that the Government use independent consultants, funded by an appropriate fee structure imposed on the CSG companies, to prepare all such reports. We further recommend that all data provided by the CSG companies to the independent consultants be available in the public domain.** Reports produced by consultants who have been hired and paid by the CSG companies can readily be slanted to read well and to cloud or hide important issues. Consultants working in this way will inevitably have a loyalty and bias to the companies that are paying them.

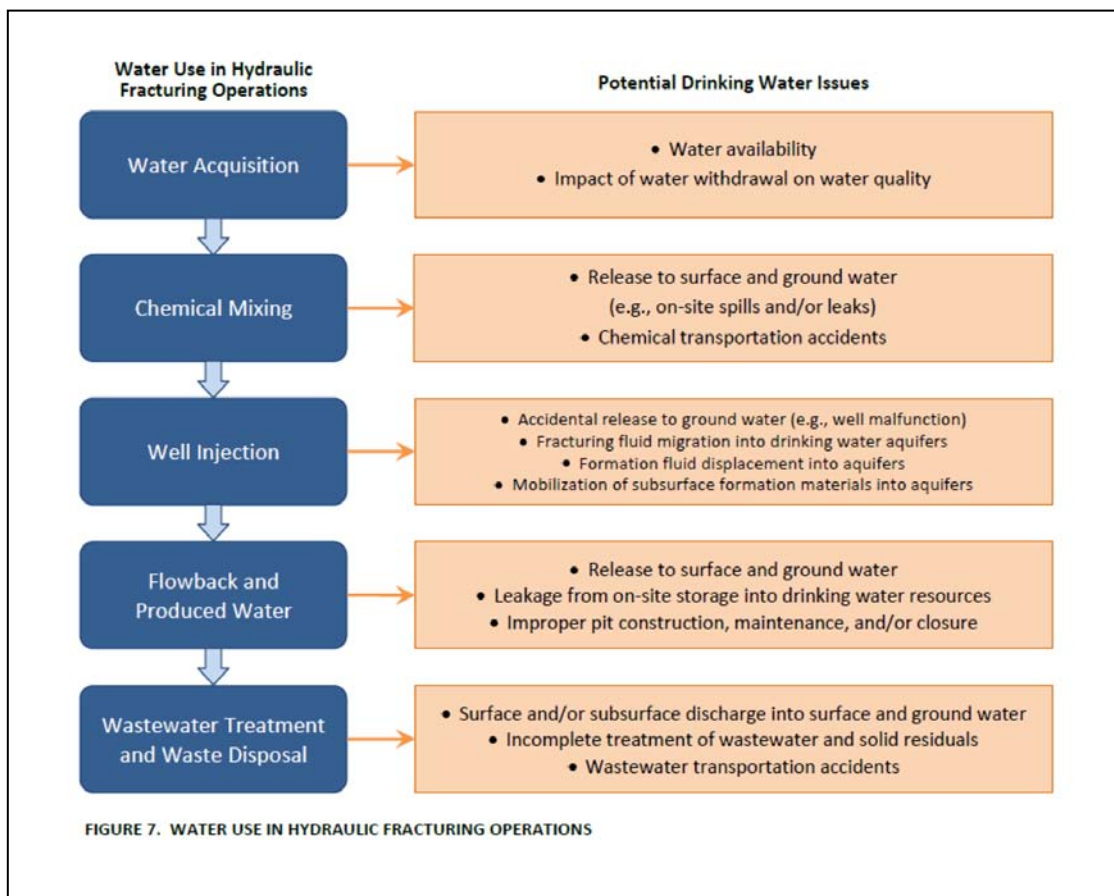
The CSG companies cannot be trusted to act in the interests of the environment – they have demonstrated in many situations already that their objective is to conceal their intentions. For example the document distributed by Pangaea Resources to the individuals whom it has approached in the Myall catchment contains the following statements:

“Coal seam gas (CSG) has absolutely nothing to do with any mining operations, coal or otherwise”.

“Any fracking that is done in Australia...uses only ‘household chemicals’ like swimming pool chemicals and sand”.

1.2 EFFECT ON GROUND AND SURFACE WATER SYSTEMS

Coal seam gas is involved with water in multiple ways. The following diagram, taken from the US Environmental Protection Agency Draft Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources, illustrates how CSG uses and interacts with water (this study includes CSG as well as shale gas in the USA as CSG extraction very often requires hydraulic fracturing).



The Australian National Water Commission in its Position Statement on CSG in December 2010, said:

“Potential impacts of CSG developments, particularly the cumulative effects of multiple projects, are not well understood”.

The CSG industry *“risks having significant, long term and adverse impacts on adjacent surface and groundwater systems”.*

Further, in its 2009 publication *Groundwater Surface Water Connectivity*, the National Water Commission says: (<http://www.nwc.gov.au/www/html/178-groundwater-surface-water-connectivity.asp>)

“The Commission considers that unless and until it can be demonstrated otherwise, surface water and groundwater resources should be assumed to be connected...This is the reverse of the current situation”.

The position of the scientists is clear – the impacts of CSG on water systems are not well known. Therefore the “Precautionary Principle” must apply. The fact that the US EPA is undertaking the major study on the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources further confirms the lack of scientific understanding and agreement on mining for unconventional gas.

The carcinogenic BTEX chemicals that have received recent publicity occur naturally within the coal seam. The banning of BTEX chemicals in the drilling process will not stop these compounds coming to the surface, seeping into the groundwater or from accidentally contaminating surrounding areas through spillages of produced water. The pH of the produced water also needs to be considered as increased acidity can result in the increased mobility of heavy metals and other compounds brought up from the coal seam.

Given that most of the water flowing into the Myall Lakes comes from the Myall and Crawford Rivers within the Myall catchment, **we recommend that no CSG activities be conducted in this area until such time as there is general agreement in the scientific community as to the impacts of CSG on ground and surface water systems. We also recommend that there should be an in-depth study of water systems within the Myall catchment before any consideration is given to CSG activities within this area.**

Most importantly, we further recommend that no CSG activities should be permitted within 500 metres of any National Park, Environmental Protection Zone in an environmental planning instrument, lands protected under SEPP 14 (*coastal wetlands*) and SEPP 26 (*littoral rainforests*), land protected under a conservation agreement, wilderness areas, aquatic reserves, Ramsar wetlands, rivers and state forests.

1.3 EFFECTS RELATED TO THE USE OF CHEMICALS

Contrary to the claim of Pangaea Resources that *“any fracking that is done in Australia...uses only ‘household chemicals’ like swimming pool chemicals and sand”* it is well documented that hundreds of chemicals are used in this process. Further, many of those chemicals have not been tested properly in terms of their potential impacts on environmental and human health. The evidence given to this Inquiry² by Dr. Healy from NICNAS, states that they have not assessed the majority of the chemicals commonly used in fracking.

We mentioned above the release of chemicals trapped within the coal and the possibility that these will enter the water or the atmosphere. The discovery of BTEX near Origin Energy fracking sites in Queensland in late 2010 is one example of the BTEX having originated from the coal seam itself, as Origin claims it was not using BTEX in the fracking.

² Dr. Healy - Director of the National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
Hansard transcript of this Inquiry 9/9/2011 commencing on page 48

Human health relies on having clean, safe drinking water and unpolluted air. Coal seam gas mining must not be allowed to endanger these basic health needs of Australians. The submission by Doctors for the Environment Australia to this Inquiry, sets out in much more detail the potential hazards of chemicals.

The other major factor relating to the use of chemicals and the chemicals that result from the coal seam gas mining process, is the fallibility of human beings. Almost daily, there are newspaper reports of spillages or other dangerous occurrences. The recent Orica disaster in Newcastle is but one example. Additionally, the companies themselves cannot always be relied upon to respond rapidly and honestly to such situations. There are numerous documented occurrences of toxic water being released onto adjacent land contrary to their approved rules for operation. Regardless of the pontifications of the mining companies, these things continue to happen. The only problem with coal seam gas mining is that human fallibility can result in very long term impacts on groundwater, far from the site of the well.

We recommend as follows:

- 1. CSG companies must disclose the chemicals to be used in drilling and fracking.**
- 2. All chemicals to be used must be assessed and approved for use by the appropriate regulatory authorities before being used in NSW for any coal seam gas activities.**
- 3. Any proposed use of chemicals must be assessed for each individual well.**
- 4. There should be strict monitoring of mining company operations and there should be severe penalties for any breaches – penalties sufficient to convince even these wealthy companies that they must obey the letter of the law.**
- 5. The government should develop a rapid response team of experts to gather information and recommend appropriate remedial actions at each site where problems are identified.**

Pending enforcement of the above recommendations, the “*Precautionary Principle*” must apply and CSG companies must not be permitted to use these chemicals.

1.4 EFFECTS OF HYDRAULIC FRACTURING

Our comments above cover this subject. Hydraulic fracturing increases the potential for the escape of chemicals and contaminated water.

Note also the 2011 report from the Tyndall Centre for Climate Change Research³ in the UK states in relation to hydraulic fracturing for shale gas (and the same concern should apply to coal seam gas):

“Altogether, the toxicity profile of the flowback fluid is likely to be of greater concern than that of the fracturing fluid itself, and is likely to be considered as hazardous waste in the UK”.

Depending on the geology of the location, the mini earthquake triggered by the hydraulic fracturing can cause damage to the well itself with resultant significant contamination due to leaking chemicals and toxic water. Wells can be fracked multiple times thereby increasing the potential for structural damage to the well. **We recommend that the assessment process for each well prior to each fracking should include an examination of the possibility of such damage.**

³ http://www.tyndall.ac.uk/sites/default/files/tyndall-coop_shale_gas_report_final.pdf
accessed on 22/10/2011

1.5 NATURE AND EFFECTIVENESS OF REMEDIATION REQUIRED UNDER THE ACT

Remediation envisaged under the existing Act talks about leveling, regrassing, reforesting etc. This ignores the significant problems created by CSG mining.

There are many situations where remediation is just not possible or will take a long time. The practice of filling disused wells with steel and concrete raises the question of what happens if this material starts to break down, many decades into the future.

What happens in relation to water contamination? After many months of statements by companies and governments that the processes were safe, Ross Dunn for the Australian Petroleum Production and Exploration Association said recently⁴:

"good management could minimise the risks of water contamination, but never eliminate them"

"drilling will, to varying degrees, impact on adjoining aquifers"

"the extent of impact and whether the impact can be managed is the question".

Similarly, Shenhua Watermark Coal in an environmental impact statement said⁵:

"Drill holes or fractures may intersect with one or multiple aquifers potentially mixing groundwater from different strata or altering the groundwater chemistry through exposure to the air, gas, fracking chemicals and drilling fluids or the release of natural compounds like BTEX".

There is plenty of evidence from "Superfund Sites" in the USA (these are sites listed by the US EPA as polluted locations requiring long-term response to clean up hazardous material contamination) that contamination of aquifers travels a long way and is virtually irreparable except by dilution over generations. Unlike mining, CSG contamination will be far from a localised impact. This is exacerbated because the field of CSG wells covers a large area. Each well can in turn cause contamination.

What happens if CSG companies destroy large swathes of mature forest for roads and infrastructure? The Pangaea representative, upon meeting one of the local residents at Bulahdelah, indicated that they wanted to conduct their exploration activities up over the adjacent mountain range that is part of the property. This is a heavily timbered area – trees that are very old. The Pangaea representative unblushingly informed the property owner that they would have no trouble going up the steep hill, they would just put a bulldozer through the forest. How and how long will it take to remediate this wanton destruction?

Land clearing in rural areas is regulated under the *Native Vegetation Act 2003* by requiring most clearing to be authorised under either a development consent or a property vegetation plan. However under current rules the **Minister responsible for mining** makes the determination in relation to the review of environmental factors that is **prepared by the mining company** prior to the granting or renewal of a title⁶. This is akin to placing the fox in charge of the hen house.

We recommend that CSG companies not be permitted access to any natural bushland area where the clearing or destruction of that area would otherwise be prohibited under other federal, state or local government planning laws and regulations. Furthermore, the minister responsible for the environment should be the person to make these determinations.

⁴ Sydney Morning Herald – 3rd August 2011

⁵ Dr. Lloyd-Smith – National Toxics Network – Hansard transcript of this Inquiry 9/9/2011 page 41 quoting from an Environmental Impact Statement by Shenhua Watermark Coal

⁶ NSW Government website <http://www.dpi.nsw.gov.au/minerals/environment/pgf> guideline document ESB18 accessed 22/10/2011

1.6 EFFECT ON GREENHOUSE GAS AND OTHER EMISSIONS

The entire rationale for coal seam gas has been that its combustion produces less carbon dioxide than coal. But this may not be a valid comparison. Professor Robert Howarth from Cornell University in his research on the life-cycle carbon cost of CSG⁷, which includes fugitive emissions of methane, estimates that over a 20 year period, CSG produces at least as much carbon as coal and potentially much more. Such is the level of concern from scientists in the USA that the Council of Scientific Society Presidents wrote to President Obama in 2010 warning that some potential energy bridges such as shale gas have received insufficient analysis and may aggravate rather than mitigate global warming.

Methane is a far more potent greenhouse gas than carbon dioxide and it is the “fugitive emissions” that cause concern. These escape into the atmosphere during the production process (flaring, drilling, fracking) and due to losses from the transmission pipelines. The ABS estimates transmission losses for natural gas over 2001-02⁸ at 1.5% of all piped natural gas. Howarth estimates that between 3.6% and 7.9% of the methane from shale gas production escapes to the atmosphere over the lifetime of a well.

We urge the Inquiry to note that it is the scientists who are raising these questions about coal seam gas. The science is not clear. **Therefore we recommend strongly that Australia should adopt the “Precautionary Principle” in all circumstances where there is any doubt whatsoever about the impacts of proposed coal seam gas mining.**

1.7 BENCHMARKING

We believe that benchmarking will be a key element in the ability to determine the impacts of coal seam gas mining. **We recommend that benchmarking of water quality, air quality, health and other parameters take place before coal seam gas exploration activities commence. This benchmarking should be conducted by independent authorities and paid for via a fee structure levied on the coal seam gas companies.**

It is naive for CSG companies to suggest to people that air conditioning, double glazing and insulation will solve the problems caused by 24 hour drilling only 200 metres from the house. People wish to continue to live as they were before. They are not collateral damage (see reference to this on the next page). They want fresh air and windows open to hear the birds - not to have an artificial cocooned atmosphere imposed on them because the mining companies will not accept the responsibility for their actions.

⁷Howarth RW et al (2011) Methane and greenhouse gas footprint of natural gas from shale formations *Climatic Change Letters* DOI 10.1007/s 10584-011-0061-5

⁸Australian Bureau of Statistics Energy Statistics Australia 2001-2002 4648.0.55.001

2. ECONOMIC AND SOCIAL IMPLICATIONS OF CSG ACTIVITIES

2.1 LEGAL RIGHTS OF PROPERTY OWNERS AND EFFECTS ON PROPERTY VALUES

Communication with property owners

This is an area that requires urgent attention. Property owners are not notified of exploration licences granted over their properties. Most rural property owners do not have the knowledge, finances or experience to deal with the CSG companies. This situation is exacerbated by the preferred approach of the CSG companies to divide and conquer. They seek to deal only with individuals, they give misleading information and generally seek to avoid proper community outreach.

To exemplify the attitude of the mining companies, here is a reported exchange that took place very recently in Queensland⁹:

The vice-president of one of Australia's biggest coal seam gas companies has reportedly told a resident of a rural residential estate being targeted for gas wells by his company that his community would be 'collateral damage.' Brett Smith, senior vice-president in the BG Group that owns QGC, was meeting Michael Bretherick, a resident of the Tara residential estate and a member of the Western Downs Alliance, along with others from the company and from the state government.

Michael Bretherick suggested that, if the company were to take the initiative by ceasing their operations within the Tara estates, begin working on addressing earlier impacts upon residents and the local environment, with emphasis on air quality, noise monitoring, soil and water testing, this would avoid confrontation and defuse an already stressful situation.

Mr. Smith replied to this that there would be no moratorium and no buy-outs, no relocation of impacted residents and no cessation of existing operations such as seismic work. Then Mr. Smith reportedly added, "With a project of this size there will be some collateral damage."

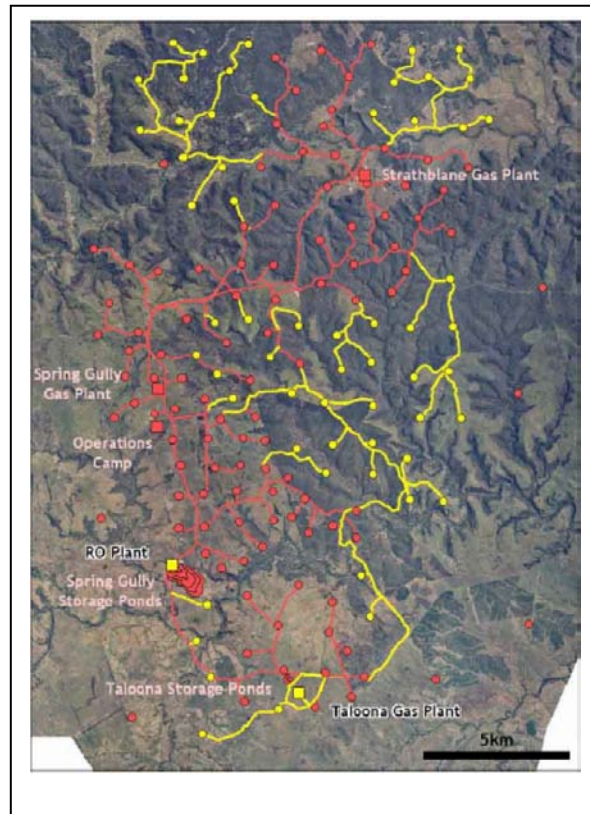
This meeting took place at Mr. Bretherick's place on the Tara residential estate on Wednesday 31 August.

Pangaea Resources claims that it "*has a strong record of providing public information, cooperation with local land holders and environmental protection*". This is untrue. There has been no public information given to local land holders within the Myall catchment. All approaches by Pangaea have been to individual land holders accompanied by grossly misleading information.

One claim by Pangaea is that its "*preferred approach or model for development involves the use of horizontal wells which can be located up to 4km apart*". We acknowledge that this is technically possible but an examination of existing CSG within Australia has not demonstrated the widespread use of this approach. The trade-off if it is used, is much more heavy industrial activity per pad in which case the potential negative environmental effects of the drilling operations may pale in comparison to those of the surface operations.

⁹ (<http://coalseamgasnews.org/?p=2056>) accessed 22/10/2011

A diagram from Origin Energy, showing the Spring Gully gas field in Queensland, demonstrates how gas wells, and connecting pipes and roads can litter the landscape. We would question how much of this information was presented to the community and to individual property owners before the commencement of exploration activities.



Property values

A further problem is that the current legislation gives no recognition to the effect of CSG mining on property values. This is NOT one of the effects for which compensation is payable yet experience in Queensland suggests a dramatic impact on property values – in fact it is questionable whether properties with gas wells are even saleable.

Noise, dust, vibration and light pollution taking away from property owner amenity

CSG mining involves heavy industrial activity – drilling, heavy vehicle movements, light pollution and so on. Current government guidelines allow this to occur as close as 200 metres from a property owner's residence. In addition there are numerous unknown persons (the workers) gaining access to the person's property at all hours of the day and night.

The legislation also permits the drilling rig to operate within 50 metres of a garden, vineyard or orchard. Putting it mildly, this is unacceptable and stressful. It may result in significant health problems for any property owners subject to such interference.

As referenced above, the mining companies think that double glazing, air conditioning and insulation will solve this problem. How inappropriate is that? This is an area that must be tackled by the government to ensure that the coal seam gas companies are responsible for their own actions and are not creating any impacts at all on nearby properties. They should be isolating and insulating their operating areas and preventing any disturbance to the areas around them.

The picture below displays a drilling rig owned by Origin Energy. We would ask members of this committee to visualise this drilling rig, operating 24 hours a day within 200 metres of their home.

Project Delivery
CSG Drilling Technology - MDC 152 Automated Drilling Rig



- Multi purpose
 - CSG and Conventional wells to 2500m
 - Water based mud or underbalanced
 - Can core, cavitate, frac or undertake other workover activities in the event that of a slow down in drilling requirements
- Hydraulic Top Drive
- Hydraulic Pipe Arm
- Pipe Tubs
- BOP trolley operated and stored and transported on doghouse skid
- BOP hydraulic lifting rams
- Bulk oil storage container
- Seal - O - Grips replacing flanges
- Cellar pump for surface hole
- Foldup hydraulic walkways
- Quick connect hydraulic couplings



38

The image below is displayed on the NSW Department of Primary Industries website. It shows a drilling rig in the Hunter Valley, operating at night. Picture this operating 200 metres from the bedroom.



In summary we recommend as follows:

1. **Compensation for any loss of property value due to CSG activities should be one of the items referenced in the legislation for which compensation is payable.**
2. **CSG companies must be required to document and present to the community as a whole, their detailed long term plans for the development of CSG within their exploration area. To prevent the companies from glossing over their full intentions, they should be prohibited from any future activities that are not described adequately in this initial documentation.**
3. **The perimeter of compounds established for the purpose of drilling wells must be at least 500 metres from any residence, garden, orchard or vineyard.**
4. **Noise, dust, vibration and light pollution (including that from flaring) must not exceed benchmark levels established for the location prior to the commencement of drilling. i.e. There must be NO impact on the property owner resulting from the drilling.**
5. **CSG companies must be required to state in advance the anticipated number of heavy vehicle movements that will be required if the gas field enters production. They should not, in the future, be permitted to exceed the number of movements stated. This is another area where consultants paid by the CSG companies can easily gloss over the true likely facts so there needs to be a major disincentive for this to happen. Equally the community and the local government authorities need to know in advance just how much traffic will be generated and the resulting impacts.**
6. **CSG companies must pay for infrastructure upgrades (e.g. to roads, bridges, electricity) that will be required because of their activities and such upgrades must be completed before they commence their activities.**

2.2 FOOD SECURITY AND AGRICULTURAL ACTIVITY

We have read numerous articles that raise the issue of food security versus CSG. **We recommend that the government adopt a long-term view when preparing the Strategic Land Use Plans.**

2.3 REGIONAL DEVELOPMENT, INVESTMENT AND EMPLOYMENT

This is a significant issue within the Myall catchment and indeed the whole area of PEL476. The Myall catchment is a significant generator of tourism and the resulting employment. It is important that CSG mining does not affect these areas.

2.4 ROYALTIES PAYABLE TO THE STATE

We are appalled at the royalty arrangements for the people of NSW in relation to coal seam gas. For the first five years of production, no royalties are payable. In year 6 they are 6%, then rise by 1% per annum until year 10, from which time they continue at 10%. This is giving the farm away and has at the same time created an unseemly rush for CSG exploration and mining. Witness the fact that most of the likely CSG gas areas in NSW already have applications and titles over them.

We recommend that royalties for CSG be set at a level that allows mining companies to earn a reasonable profit, but not a super profit. Super profits, if they exist, belong to the people of NSW, not the company that was fastest out of the blocks to get the exploration licence.

2.5 LOCAL GOVERNMENT

At the moment, local government has no influence on CSG mining activities. Local planning laws do not apply. Indeed, even if a rural property has a conservation agreement with the NSW Government, that does not preclude mining within the area of the conservation agreement.

Similarly, local government is not an integral part of the planning process in respect of traffic and other demands resulting from CSG mining.

We recommend that the new set of rules governing CSG exploration and mining within NSW take into account local government zonings, infrastructure requirements and traffic planning.

3. THE ROLE OF CSG IN MEETING THE FUTURE ENERGY NEEDS OF NSW

3.1 THE NATURE AND EXTENT OF CSG DEMAND AND SUPPLY

The question that we pose is, how much CSG will be produced for local use versus export. We understand from data provided by the Australian Industry Group¹⁰ that most of the gas produced in NSW will be targeted for export. Given the significant environmental, health and social implications of CSG mining, we ask why we should expose the people of NSW to these major threats purely so that mining companies can earn large profits from their exports.

We recommend that any CSG produced should be for use solely within Australia.

3.2 RELATIVE WHOLE OF LIFE-CYCLE EMISSION INTENSITY OF CSG

This is a significant concern re coal seam gas. We have commented above on the research by Professor Howarth at Cornell University. This suggests that coal seam gas has the potential to aggravate global warming rather than to mitigate it.

We recommend that the government delay any decision on the widespread use of CSG for the future energy needs of NSW until this issue has been investigated thoroughly.

We recommend also that, as a matter of urgency, the Government should seek to develop and implement technologies that do NOT use fossil fuels.

¹⁰AIG (2011) Energy shock: confronting higher prices. *Australian Industry Group*. Accessed online at http://www.aigroup.com.au/portal/binary/com.epicentric.contentmanagement.servlet.ContentDeliveryServlet/LI_VE_CONTENT/Publications/Reports/2011/Energy_shock_confronting_higher_prices.pdf on 18th March 2011.

4. THE INTERACTION OF THE ACT WITH OTHER LEGISLATION AND REGULATIONS

At the moment, the NSW Petroleum (Onshore) Act 1991 is in major conflict with just about all other legislation and regulations governing the protection of the environment and health. A number of instances have been referenced above.

We recommend that the NSW Government re-write the act to ensure that it works in conjunction with other legislation covering the protection of the environment and health and property owners' property and compensation rights.

Until this legal conflict is resolved, the mining companies will continue to use the legislation to their advantage. This will only lead to continued and growing agitation and conflict between the community, the mining companies and the government.

To quote Greg Craven, Vice Chancellor of the Australian Catholic University¹¹,
"never has a single issue annoyed so many people in so many richly different ways".
CSG leases cover enormous areas of NSW with vast potential impacts.
On the current path, opposition to coal seam gas will become an avalanche.

¹¹ Greg Craven *"Grim farce of fracking gas"* - Australian Financial Review 3/10/2011

5. THE IMPACT SIMILAR INDUSTRIES HAVE HAD IN OTHER JURISDICTIONS

It is clear that coal seam gas and shale gas (which uses similar technologies) are the subject of much concern around the world. France, the UK, South Africa, the USA and Canada have all imposed bans in certain regions in relation to hydraulic fracturing.

The US Environmental Protection Agency is funding a large study on the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources.

The behavior of large multi-national mining and petroleum companies has not engendered trust in their actions. They are seldom up front with their knowledge, information and financial dealings and there is a long history of environmental damage in areas where supposedly, there were sufficient protections in the rules of operation to prevent such damage. The *Exxon Valdez*, the Gulf of Mexico oil catastrophe and the Montara Wellhead in Western Australia are all examples of disasters where theoretically there was a set of rules to prevent such occurrences.

Dr. Sylvia Earle, one of the world's foremost marine experts and an authority on marine life in the Gulf of Mexico, stated in her testimony to the US House of Representatives Inquiry into the impacts of the Gulf of Mexico oil spill:

"While yielding to the pressure to extract golden eggs from the golden Gulf, we have failed to take care of the Gulf itself".

Coal seam gas mining in Australia presents identical challenges. We must ensure that we preserve the environmental, health and social fabric of Australia while benefiting from the coal seam gas. If we fail to do so, future generations will pay the penalty.

6. THE POSITION OF THE NSW GOVERNMENT

The NSW Government has made a submission to the NSW Legislative Council Inquiry into Coal Seam Gas. This states the Government's position on the areas raised by the terms of reference for this Inquiry. We therefore ask what is the purpose of the NSW Legislative Council Inquiry if the Government has already established its position in relation to coal seam gas.

There are a range of statements made by the Government in this submission and in evidence given to this Senate Inquiry by senior NSW public servants that are a cause for great concern. We have identified a number of these areas of concern to demonstrate our strong belief that the NSW Government is ignoring major issues in its quest for the golden eggs from coal seam gas.

The areas where we have made specific comments are:

Contamination of aquifers.

Produced water.

Legal rights of property owners.

Air pollution.

Health impacts arising from proximity to CSG activity.

To emphasise what we perceive as the shortcomings of NSW Government policy, we have repeated below, several quotes that have been used earlier in this submission.

6.1 CONTAMINATION OF AQUIFERS

The NSW Government is developing the Aquifer Interference Policy in relation to this.

The position of the NSW Water Office is¹²:

"If we put the appropriate regulatory mechanisms in place we believe we can avoid it and prevent it in the first place".

How we see it:

It is inevitable that contamination will occur.

1. Shenhua Watermark Coal¹³:
"Drill holes or fractures may intersect with one or multiple aquifers potentially mixing groundwater from different strata or altering the groundwater chemistry through exposure to the air, gas, fracking chemicals and drilling fluids or the release of natural compounds like BTEX".
2. The Australian National Water Commission in its Position Statement on CSG in December 2010, said:
"Potential impacts of CSG developments, particularly the cumulative effects of multiple projects, are not well understood".
The CSG industry *"risks having significant, long term and adverse impacts on adjacent surface and groundwater systems"*.
3. The National Water Commission says in its 2009 publication Groundwater Surface Water Connectivity¹⁴:
"The Commission considers that unless and until it can be demonstrated otherwise, surface water and groundwater resources should be assumed to be connected...This is the reverse of the current situation".
4. The US Environmental Protection Authority recently commissioned a major study on the impacts of hydraulic fracturing on drinking water resources. This covers all types of unconventional gas which includes coal seam gas. Clearly the US EPA does NOT believe science has proved unconventional gas extraction is safe.

¹² Mr. O'Neill – Director Water Policy & Planning, NSW Water Office –
Hansard evidence to this Inquiry 9/9/2011 page 3
on being asked how they would handle contamination of aquifers

¹³ Dr. Lloyd-Smith – National Toxics Network – Hansard evidence to this Inquiry 9/9/2011 page 41
quoting from an Environmental Impact Statement by Shenhua Watermark Coal

¹⁴ <http://www.nwc.gov.au/www/html/178-groundwater-surface-water-connectivity.asp>

6.2 ***PRODUCED WATER***

The position of the NSW Government is¹⁵:

The Aquifer Interference Policy “will require proponents to develop other treatment and disposal options which can utilise the intrinsic value of this water to other water users (including irrigated agriculture, other industry and town water supply) and the environment.”

How we see it:

The Government has not looked at the potential problems associated with this proposal.

1. The above statement assumes that the produced water is treated by reverse osmosis, however that process has limitations. Until there is agreement by the scientists re the efficacy of the proposed solution, the ***Precautionary Principle*** should apply.
2. Dr. Lloyd-Smith of the National Toxics Network states¹⁶:
“We are also concerned about the optimism people show about reverse osmosis and feel that, to some degree, is misplaced. There is no question that reverse osmosis has significant limitations. There are a number of documents that outline these quite considerably. The Water Commission's Waterlines series, which is referenced in our report, is one of them. Some of the chemicals that it cannot remove are some of the chemicals we are most worried about—methanol, which you heard about earlier, ethylene glycol, the nonylphenols, the naphthalene—all chemicals used by the Australian industry in the coal seam gas.”
3. The 2011 report from the Tyndall Centre for Climate Change Research in the UK states in relation to hydraulic fracturing for shale gas (and the same applies to coal seam gas) states¹⁷:
“Altogether, the toxicity profile of the flowback fluid is likely to be of greater concern than that of the fracturing fluid itself, and is likely to be considered as hazardous waste in the UK”.
4. We have not seen any reference by the NSW Government to how they propose to handle the vast quantities of salt resulting from the produced water. This is another issue of concern.

¹⁵ NSW Government submission to NSW Legislative Council Inquiry into coal seam gas – page 22

¹⁶ Dr. Lloyd-Smith – Senior Advisor, National Toxics Network – Hansard evidence to this Inquiry 9/9/2011 page 41

¹⁷ http://www.tyndall.ac.uk/sites/default/files/tyndall-coop_shale_gas_report_final.pdf

6.3 LEGAL RIGHTS OF PROPERTY OWNERS

The position of Government:

NSW Government submission to Legislative Council Inquiry¹⁸:

“Exploration for coal seam gas is regulated under the Petroleum (Onshore) Act 1991 (POA). This legislation recognises the rights of landholders and aims to ensure that landholders are not adversely impacted and are appropriately compensated for any petroleum exploration or production activities carried out on their land.”

Access to properties for purposes of mining¹⁹:

“Do we want to say that there are areas that absolutely nothing can be done by anybody anywhere anytime? No, we do not think that is an appropriate regime”.

Access and compensation²⁰:

“We believe that the appropriate regime exists. The petroleum and other resources that lie under the land belong to the Crown, and there should be opportunities for the development of those resources, but that needs to be done in a balanced way.”

How we see it:

The existing provisions are unacceptable and will promote extensive community outrage unless they are changed.

1. Landholders have no rights to say NO. In the end, the legislation allows mining companies to gain entry for both exploration and production.
2. The provisions for compensation for both exploration and production are grossly inadequate. Those listed in the legislation are²¹:
 - a) damage to the surface of land, to crops, trees, grasses, or other vegetation (including fruit and vegetables) or to buildings and improvements, being damaged, which has been caused by or which may arise from prospecting operations;
 - b) deprivation of the possession or of the use of the surface of land or any part of the surface; or
 - c) severance of land from other land of the landholder; or
 - d) surface rights of way and easements; or
 - e) destruction or loss of, or injury to, disturbance of or interference with stock; or
3. There is anecdotal evidence that properties affected by coal seam gas lose significant value.
4. Mining companies have vast financial resources with which to fight legal challenges. The landholders have little knowledge and limited finances.

¹⁸ NSW Government submission to NSW Legislative Council Inquiry into coal seam gas – page 28

¹⁹ Mr. Paterson - Director General Dept of Trade & Investment, Regional Infrastructure & Services Hansard evidence to this Inquiry 9/9/2011 page 66

on being asked about mining companies forcing entry to private property

²⁰ Mr. Paterson – Director General Dept of Trade & Investment, Regional Infrastructure & Services Hansard 9/9/2011 to this Inquiry page 64 on being asked about legal rights of property owners

²¹ Extract from NSW Government DPI web site document

Land holders rights, access arrangements and compensation under the Petroleum (Onshore) Act 1991

6.4 AIR POLLUTION

The position of Government:

The NSW Government submission to the NSW Legislative Council Inquiry states²²:

“There are minimal particulate issues for CSG extraction, production and electricity generation as compared to coal extraction and electricity generation, as between 95 and 99 percent of CSG is methane. The only particulate issues for CSG relate to drilling. The major pollution concern with CSG is greenhouse gas emissions.”

How we see it:

The Government is ignoring major potential health impacts.

1. CSG has the potential to cause health problems resulting from air pollution as set out in the quotes below. **We recommend that flaring should not be permitted.**
2. Dr. Lloyd-Smith of the National Toxics Network states²³:
“I would like to touch on air emissions to finish up. While water has had a lot of attention, air emissions have not. Certainly, we know many of the chemicals involved are volatile or semivolatile. For example, methanol has a half-life of two weeks in the air, which allows it to move quite a considerable distance. We have very little air monitoring in Australia, and even less in the public domain. Yet the sampling that we have seen from the States, and I use that because we have no other data, picked up 22 toxic air contaminants around gas activities, five of which were at levels very very high—up to 3,000 times the safety levels. In relation to air emissions, there seems to be, from our review of both the literature and industry documents, no real consideration of air emissions from flaring. As we know, 250 toxins have been associated with flaring and some of those are carcinogens. I think it is time that we see some very serious air monitoring around flaring. I know you have already been to the fields so you know what it looks like and you know how much flaring goes on.”
3. Dr. Carey from Doctors for the Environment Australia states²⁴:
“You can also have other compounds called nitrogen oxides. Nitrogen oxides and volatile organic compounds actually form a chemical reaction, particularly under heat and sunlight, to form ground-level ozone. This is what causes summer smog in our cities where you are getting these compounds emitted from industry and cars. Ozone is not only a greenhouse gas but also a strong respiratory irritant. It can trigger asthma attacks. It can damage lungs and reduce lung function. A lot of contaminants are a problem because they particularly affect people with chronic lung or heart disease, but ozone also affects people with quite healthy lungs. The trouble is, if you have an industry that is emitting large amounts of emissions that are harmful to human health, often that is regulated in some way, but here we have small amounts being released in multiple areas so that it is not monitored and it is not regulated in any way. When we are talking about this number of wells and emissions, cumulatively they have the potential to have quite a large impact. So in the absence, again, of any air monitoring, it is very difficult to make scientific judgments about what the risks are.”

²² NSW Government Submission to NSW Legislative Council Inquiry into coal seam gas page 28

²³ Dr. Lloyd-Smith – Senior Advisor, National Toxics Network – Hansard evidence to this Inquiry 9/9/2011 page 41

²⁴ Dr. Carey – Vic Committee Member, Doctors for the Environment Australia

Hansard evidence to this Inquiry 9/9/2011 page 36

6.5 HEALTH IMPACTS ARISING FROM PROXIMITY TO CSG ACTIVITY

The position of Government:

The NSW Government submission to the NSW Legislative Council Inquiry states²⁵:

“The holder of a petroleum production lease may not carry out activities on any cultivated land within the vicinity of a landholder’s dwelling house, garden, orchard or vineyard without the landholder’s consent.”

How we see it:

The Government is likely to trigger major health issues due to the stresses involved in dealing with coal seam gas.

1. The current regulations are enough to make every landholder oppose CSG. The legislation permits (without landholder’s consent) activities as close as 200 metres from a residence and 50 metres from a garden, vineyard or orchard. One can only imagine the enormous stress that would result from the impacts of noise, vibration, dust, light, heavy vehicle movements and the presence of unknown people within 200 metres of a landholder’s residence.
2. The Doctors for the Environment Australia state²⁶:
“Health impacts are occurring now from the disruption of hitherto stable farming communities with much of the stress, family discord and mental illness expected to be reminiscent of the Murray Valley region due to drought.”

²⁵ NSW Government Submission to Legislative Council Inquiry into coal seam gas Page 29

²⁶ Doctors for the Environment Australia – submission dated 27/6/2011 to this Inquiry – page 3

7. SHORT TERM ACTIONS FOR NSW TO RESOLVE MAJOR ISSUES

Current public feeling about coal seam gas is heading in the same directions as protests of earlier years against mining on the Great Barrier Reef and building dams on the Franklin River.

If the NSW Government truly wishes to put the CSG industry on a better footing so that it can co-exist within the community, we recommend as follows:

7.1 *Do the scientific research now*

The current status

1. There is major disagreement re the science:
 - a) Mining companies say CSG does not damage the environment or health.
 - b) Many senior scientists believe CSG will result in significant damage to the environment and health.
 - c) Countries around the world are still seeking answers to CSG. It is not proceeding peacefully anywhere.
2. The Government does not have the expert resources to advise.
The mining companies and their lobbyists have easy access to the government.
The result is a Government very much influenced by the mining companies.
3. The mining companies employ many major environmental and hydrogeological consultants so these organizations are promoting the cause of CSG. Many submissions admit to lack of knowledge and potential impacts but say "*don't worry, we will handle the problems*".
4. The *Precautionary Principle* has been abandoned in favour of *Adaptive Management*. This says:
"If I damage it I hope I can figure out how to fix it!!"

Recommendations

1. The Government should commission independent peer reviewed expert advice on the full range of potential impacts that have been raised in submissions to this Inquiry.
2. The Government should impose a moratorium on CSG approvals for both exploration and production until these expert reports have been completed.

What will this achieve?

1. This will enable the Government to take informed decisions in relation to coal seam gas.
2. It will also enable the Government to present informed scientific opinion to the community as a means of gaining their support for coal seam gas.
3. Any delay, even if it was a couple of years, will not have a long term impact on New South Wales. Far better to do it properly than act in haste and repent in leisure.
4. The gas companies will complain but it is likely that these recommendations will produce a better result for them than if they continue on the current path where there is now widespread opposition to coal seam gas.

7.2 Legal rights of property owners

The current status

1. Property owners cannot say NO.
2. CSG extraction can occur within 200 metres of a residence and 50 metres from a garden, vineyard or orchard.
3. Compensation is negligible.
4. The property owners have little knowledge or money and are opposing mining companies with vast financial and legal resources.
5. The official Government position is that the current rules are fine!!

Recommendations

1. Property owners must be able to say NO to CSG exploration and production on their land.
2. The compensation provisions should be expanded to encompass anything that the property owners and mining companies agree on in their access agreements.
3. CSG companies must pay all legal costs in relation to access.
4. No CSG activities should be permitted within at least 500 metres of any residence, garden, vineyard or orchard.

What will this achieve?

1. The property owners will no longer feel that they are being put upon by the Government.
2. The property owners will be equal partners in any negotiation with the mining companies.
3. Property owners will only agree to access if they are convinced that the mining companies will do the right thing in relation to impacts on the environment and health.
4. The property owners will have more control over the location of CSG activities on their properties.
5. It can resolve the issue that the presence of CSG on a property results in a major loss of value. The property owners can get an appropriate income stream from CSG.
6. **Note also that most CSG companies have already admitted in evidence to this Senate Inquiry that they would not force access to properties if the property owner said NO. So this recommendation is not changing the actual reality but it is changing the perception of property owners.**

7.3 Government resources

Current status

1. The Government has grossly inadequate resources to conduct the review and approval processes for exploration and production.
2. The Government has grossly inadequate resources to conduct the monitoring functions that will be required as CSG production expands.
3. The mining companies cannot be relied upon in any form of self regulation or monitoring.
4. The proposed rapid expansion of CSG within NSW will create an enormous workload for the Government to manage properly.

Recommendation

1. The Government should ensure that it has appropriate **independent** expert resources to review all exploration and production applications from the point of view of environment, health and social welfare.
2. The Government should ensure that it has properly trained and adequate numbers of resources to monitor all CSG exploration and production activities.
3. The costs for these functions should be met by an appropriate levy or fee structure on the CSG companies.

What will this achieve?

1. The Government will be in a much stronger position to determine whether proposed exploration and production applications are acceptable or not.
2. The Government will be able to exert proper control over actual exploration and production activities including regular monitoring for contamination and air pollution.
3. Note that the time period during which the scientific research is being done will give the Government time to assemble its resources.

7.4 The legislation needs teeth

Current status

1. There is no financial provision for potential long term liabilities in rectifying environmental damage caused by CSG.
2. The industry is new and will be employing significant numbers of relatively untrained people, many of whom could be rightfully termed “cowboys”.
3. People often take the easy way out and this can lead to all kinds of contaminants being put into the environment.
4. Penalties imposed for breaches of the rules are often insignificant in the context of the overall revenue streams for these mining companies.

Recommendation

1. Mining companies must pay very large up front bonds to cover potential **long-term** remediation requirements (noting that long term can be decades after a well has been decommissioned).
2. The legislation must impose financially significant penalties for breaches.

What will this achieve?

1. A fund will be created to enable the remediation work on problems that manifest themselves potentially many decades after approval.
2. Mining companies will focus on meeting their obligations. If they believe they will receive significant financial penalties, they will put much more effort into training and supervision of their workers who are doing most of the field activities where contamination and environmental damage can occur.